ATMOSPHERIC ELECTRICITY.

AURORAS.

Auroras were reported as follows: 2d, Farmington, Minn. 3d, Ilion, N. Y. 6th, Carson, Iowa. 10th, Hanover, N. H. 14th, Saint Andrews, N. B.; Orono, Me.; Amherst and Newburyport, Mass.; Berlin Mills, N. H.; and Grantsburgh and Madison, N. H. 14-15th, Green Mountain, Me. 15th, Bar Harbor and Orono, Me.; and Newburyport, Mass. 16th, Kent's Hill, Me.; Pine River Dam, Minn.; and Webster, S. Dak. 17–18th, Sault de Ste. Marie, Mich. 18th, Green Mountain, Me.; Amherst, Mass.; Saint Vincent, Minn.; Hanover, N. H.; and Webster, S. Dak. 19th, Sault de Ste. Marie, Mich.; Huron and Webster, S. Dak. 19–20th, Saint Vincent, Minn. 20th, Alta, Iowa; and Farmington, Minn. 24th, Webster, S. Dak.

Saint Andrews, N. B., 14th: an auroral light of a curtain-like formation was observed from 8.30 to 9.30 p. m.

Green Mountain, Me., 14–15th: a faint aurora consisting of a well-defined arch of white light was observed from 8 p. m., 14th, until morning of 15th. The arch rose to altitude 8°, and extended from azimuth 150° to 215°, with maximum brilliancy about 10 p. m. A similar display both as to time and character was observed on the 18th.

Sault de Ste. Marie, Mich., 17–18th: an aurora consisting of an arch of pale orange color extending from azimuth 175° to 225°, from which beams of light shot up to about altitude 25°, was observed at 9.15 p. m., 17th. The display disappeared about 2.20 a. m., 18th. On the 19th an aurora consisting of a white light which rose to about altitude 20° was observed at 9.45 p. m. The maximum brilliancy of this display occurred about 11.35 p. m., at which time it extended from nw. to ne. At 11.50 p. m. the aurora had disappeared.

Saint Vincent, Minn., 19–20th: an auroral display was observed from 10.10 p. m., 19th, to 1.40 a. m., 20th, consisting of 8 well-defined streamers. The aurora extended from azimuth about 175° to 210° and varied from deep red to pale straw in color. Two streamers located in the centre of the display attained altitude about 60°.

THUNDER-STORMS.

The more severe thunder-storms of the month are described under "Local storms." East of the Rocky Mountains thunder-storms were reported in the greatest number of states, 30, on the 1st, 4th, and 19th; in 20 to 29 on the 2d, 3d, 5th to 10th, 17th, 20th, 21st, and 26th; in 10 to 19 on the 11th to 16th, 18th, 22d, 24th, 25th, and 27th to 30th; and in 5 to 9 on the 23d and 31st.

East of the Rocky Mountains thunder-storms were reported on the greatest number of dates, 30, in Fla.; on 20 to 28 in Ill., Iowa, Kans., La., Mo., Nebr., N. Y., S. Dak., Tenn., and Tex.; on 10 to 19 in Ala., Ark., Conn., Ga., Ind., Ky., Md., Mass., Mich., Minn., Miss., Mont., N. H., N. J., N. C., N. Dak., Ohio, Pa., S. C., Vt., Va., and Wis.; and on 1 to 9 in D. C., Ind. T., Me., R. I., and W. Va. West of the Rocky Mountains thunder-storms were reported as follows: Ariz., 1st to 31st; Colo., 1st, 4th, 5th, 8th to 20th, 22d, 24th, and 27th; Cal., 5th to 9th, 12th, 13th, 14th, 17th, 21st, and 26th to 29th; Idaho, 8th, 9th, 10th, 13th, 17th, 18th, 20th, 23d to 27th, and 30th; Nev., 5th to 14th, 21st, 22d, 24th, and 27th to 31st; N. Mex., 1st, 2d, 4th, 13th, 15th to 23d, 25th to 28th, and 31st; Oregon, 13th, 14th, 28th, 30th, and 31st; Utah, 8th to 15th, 17th, 18th, 19th, 21st, 22d, 24th, 27th, 29th, 30th, and 31st; Wash., 10th, 18th, 20th, 21st, 29th, 30th, and 31st; Wyo., 2d, 3d, 4th, 9th to 13th, 15th, 16th, 18th, 19th, 21st to 26th, 28th, and 30th. There were no states and territories in which thunder-storms were not reported.

MISCELLANEOUS PHENOMENA.

SUN SPOTS.

Haverford College Observatory, Pa., (observed by Prof. F. P. Leavenworth):

Date.	Number of new		Disappeared by solar rotation.		Reappeared by solar rotation.		Total number visible.		Faculæ.	Remarks.
	Groups.	Spots.	Groups.	Spots.	Groups.	Spots.	Groups.	Spots.	Groups.	
Aug., 1890.										
1, 12 m.....	0	11	0	0	0	0	3	22	2	Definition poor; 1 large spot.
2, 5 p. m...	1	1	1	1	0	0	3	4	2	1 large spot.
3, 5 p. m...	0	0	0	0	0	0	1	2	0	Definition bad.
4, 5 p. m...	0	3	0	0	0	0	1	5	1	Definition fine; 1 large spot.
5, 5 p. m...	1	7	0	0	0	0	2	9	1	Definition poor; size medium.
6, 5 p. m...	0	6	0	0	0	0	2	14	1	Definition good.
7, 4 p. m...	0	0	0	0	0	0	2	3	1	
9, 5 p. m...	0	0	0	0	0	0	0	0	1	Definition good.
11, 9 a. m...	1	2	0	0	0	0	1	2	1	Definition fair; size medium.
13, 5 p. m...	0	0	0	0	0	0	0	0	1	Definition fair.
14, 3 p. m...	1	2	0	0	0	0	1	2	1	Definition fair; spots small.
15, 4 p. m...	0	0	0	0	0	0	0	0	0	Definition good.
16, 11 a. m...	1	3	0	0	0	0	1	3	0	Definition poor; spots small.
17, 11 a. m...	0	0	0	0	0	0	0	0	0	Definition good.
18, 3 p. m...	0	0	0	0	0	0	0	0	0	Definition poor.
19, 12 m.....	0	0	0	0	0	0	0	0	1	Definition good.
20, 6 p. m...	0	0	0	0	0	0	0	0	0	Definition fair.
22, 5 p. m...	2	3	0	0	0	0	2	3	1	Definition good; spots small.
24, 4 p. m...	1	5	0	0	0	0	3	8	1	Definition fair; near edge of sun.
25, 3 p. m...	0	14	0	0	0	0	2	21	1	Definition good; 1 large spot.
26, 11 a. m...	0	10	0	0	0	0	1	24	1	Definition poor; large spots.
27, 3 p. m...	0	44	0	0	0	0	2	78	2	Definition good; 1 very large spot.
28, 3 p. m...	0	26	0	8	0	0	2	96	1	Definition good; 2 very large spots
29, 3 p. m...	0	0	1	2	0	0	1	60	0	Definition fair; 2 very large spots.
30, 3 p. m...	0	10	0	0	0	0	1	104	0	Definition good; 2 very large spots
31, 3 p. m...	1	1	0	0	0	0	2	88	0	Definition fair; 2 very large spots.

Mr. C. E. Buzzell, Leaf River, Ill.: the group of July 28th completed the transit, disappearing in faculæ 7th. August 2d prominent faculæ on east limb, which broke out in small spots 5th and subsided 8th. Poor definition and apparently clear disc until 25th, when 2 large groups appeared by rotation, and were on the meridian 31st. September 1st unchanged. These groups occupied the same position as the July 28th disturbance, which, however, had about subsided before passing the western limb.

Mr. John W. James, Riley, Ill.: 2d, spot of July 25th vanished before reaching western edge. 3d, a large spot, estimated 24,200 miles in diameter, was on sun's meridian. 5th, spot breaking up, and gone 8th. 9th to 25th, observations on 14 days, but no spots seen. 26th, a fine group near eastern edge; this group was estimated 94,000 miles long, and had a large spot at each end, 34,200 and 27,400 miles in diameter; each spot was surrounded by numerous small spots, and they were connected by a string of small spots. This group was the finest and sharpest in definition of any seen for years.

Mr. D. E. Hadden, Alta, Iowa: one large spot in north latitude near meridian, 1st. One spot, ne., 2d to 5th. One group and 4 small spots, new, se., 6th. One group and 2 small spots visible, se., 7th. Clear disc and no spots, 8th to 11th, 13th to 19th, 21st and 22d. 23d cloudy. One group and 2 small spots, new, visible 24th. 25th cloudy. One group and 4 spots, new, on 26th; brilliant faculæ near limb, ne.; group on w. limb surrounded by faculæ. 27th, one group, 8 spots, 1 large spot and others small; faint spot, ne., surrounded by faculæ. 28th, 5 spots, new.; one group, 13 spots; one large spot, 3 smaller, others very faint, 3 days in on sw. limb. 29th and 30th, one group, 9 spots; appearance about the same as 28th, but larger spots, separated more.

Mr. H. D. Gowey, North Lewisburgh, Ohio: sun spots were observed 2d, 4th, 6th, and 27th to 31st.